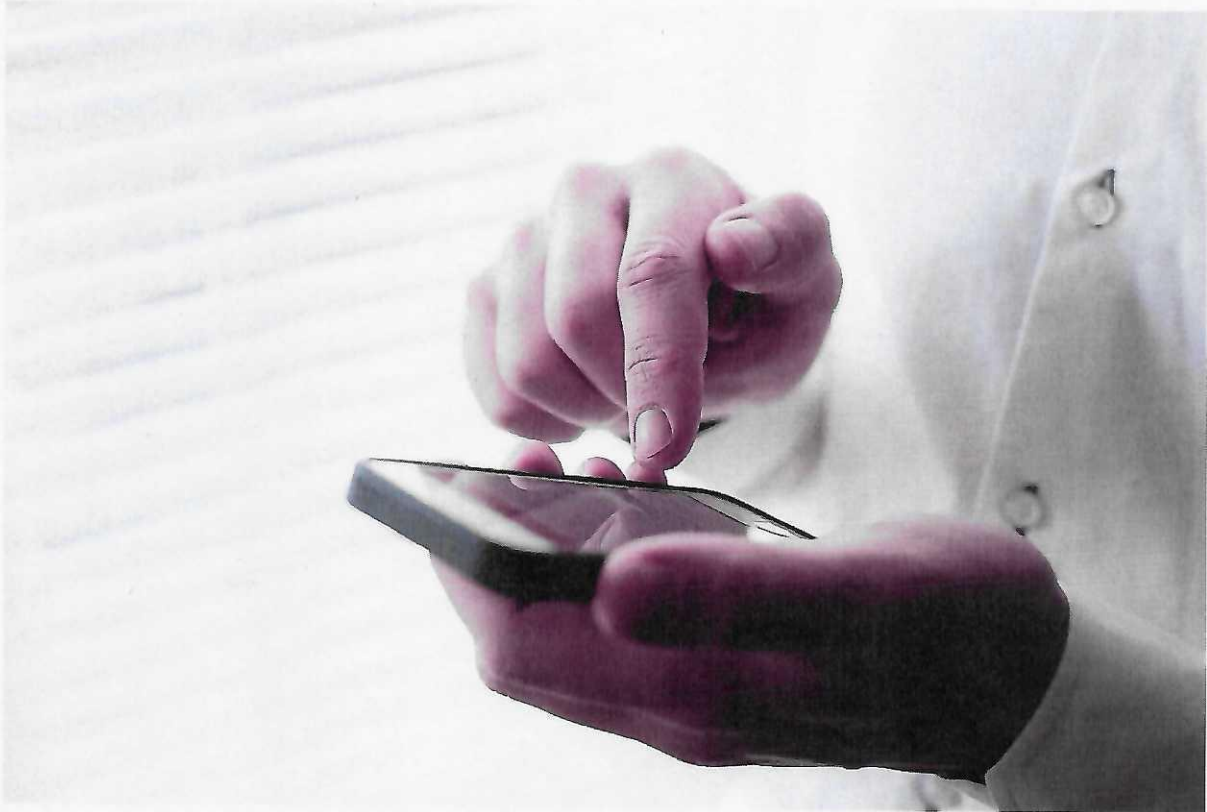


Syllabus for MD (Forensic Medicine) Programme



Guru Gobind Singh Indraprastha University

A State University established by the Govt. of NCT of Delhi

University School of Medicine and Allied Health Sciences

MD Forensic Medicine

Programme Objectives

A candidate upon successfully qualifying in the M.D. (Forensic Medicine) examinations should be able to –

1. Become an expert in Forensic Medicine.
2. Identify and define existing as well as future Medico-legal problems as they emerge in the community and work to resolve such problems by planning, implementing, evaluating and modulating Medico-legal services.
3. Undertake medico-legal responsibilities and discharge Medico-legal duties, which arise in day-to-day general practice as well as in hospital practices.
4. Keep himself/herself abreast with all recent developments and emerging trends in Forensic Medicine, Ethics and the Law.
5. Evaluate his professional activities, educational needs and select appropriate learning resources periodically.
6. Deal with general principles and practical problems related to forensic, clinical, emergency, environmental, medico-legal and occupational aspects of toxicology.
7. Deal with Medico-legal aspects of Psychiatry, Mental health and Drug Addiction.
8. Impart education in Forensic Medicine and Toxicology to under-graduate and post-graduate students with the help of modern teaching aids.
9. Assess the students' understanding of the subject of Forensic Medicine.
10. Plan and modify the undergraduate curriculum.

Specific Learning Objectives

1. Perform medico-legal autopsy independently with required physical assistance, prepare report and derive inferences.
2. Interpret histo-pathological, microbiological, radiological, chemical analysis, DNA profile and other investigative reports for medico-legal purposes.
3. Depose as an expert witness in a Court of Law on medico-legal matters.
4. Describe relevant legal/court procedures applicable to Medico-legal/Medical practice.
5. Identify, examine, initiate management and prepare reports on medico-legal cases in emergency set up.
6. Identify and discharge all legal responsibilities in medico-legal cases/matters.
7. Plan, organize and supervise medico-legal work in general/teaching/district hospitals and in any health care set up.
8. Interpret, analyse & review medico-legal reports prepared by other medical officers.

Syllabus of M.C.I. (M.D. in forensic medicine)
approved by BOS H. C. S. / H. C. S. / H. C. S.

9. Collect, preserve and dispatch various trace evidences to the concerned authorities.
10. Identify and articulate the correct medical ethical position in relation to the patient, profession, society, State and humanity at large.
11. Interpret for and advice authorities on matters related to medical ethics and medico-legal issues.
12. Discharge his duties in respect of forensic, clinical, emergency, environmental, medico-legal and occupational aspects of toxicology.
13. Plan, organize and manage toxicological laboratory services.
14. Provide information and consultation on all aspects of toxicology to professionals, industry, Government and the public at large.
15. Encourage interaction with the allied departments by rendering services in advanced laboratory investigations and relevant expert opinion.
16. Encourage the student to participate in various workshops/seminars/journal clubs/demonstration in the allied departments, to acquire various skills for collaborative research.
17. Uphold the prestige of the discipline amongst the fraternity of doctors.

Departmental Resources

It be mandatory for the department to develop at least 2 of the following laboratories. In addition to the facilities, the laboratory should be involved in active research in one or more well defined fields.

- Forensic Immunology
- Forensic Serology
- Anthropometry
- Forensic Radiology
- Electronmicroscopy

Post Graduate Training

Course shall be of three years, organized in six units (0-5). This modular pattern is a guideline for the department, to organize training. Training programme can be modified depending upon the workload and academic assignments of the department.

Unit 0 (upto 6 months)

- A. 1. Orientation Programme
2. Basic autopsy skills.
3. General principles of forensic medicine.
4. Introduction to medical toxicology.

- B. Organized teaching sessions.
Attend and participate in undergraduate teaching.
- C. Posting for autopsy work, clinical forensic medicine and toxicology
- D. Orientation to organization and functioning of toxicology / research laboratory.
- E. Preparation of thesis protocol.

UNIT 1&2 (6-18months)

- A. Organized teaching sessions.
- B. Thesis work and other research work.
- C. Clinical forensic medicine work for practical experience in medico legal procedures and on-the-job practical training in the medico-legal aspects of emergency medicine, radiology and other clinical disciplines.
- D. Orientation to the applied aspects of Anatomy, Physiology Biochemistry, Microbiology, Pathology, Blood Bank, Psychiatry and forensic sciences.
- E. Posting for autopsy work, clinical forensic medicine and toxicology laboratory. The candidate will be required to assist and conduct postmortem examinations.
- F. Attend Court summons for cases conducted by themselves or where deputed to attend in cases where an expert is required to depose by Court of Law.

UNIT 3, 4 & 5 (18-36 MONTHS)

- A. Organized teaching sessions and thesis work.
- B. Submission of thesis six months prior to examination.
- C. Posting for autopsy work, clinical forensic medicine and toxicology laboratory to continue. The candidate shall be required to conduct 100 autopsy cases and 100 clinical cases during his/her entire training period.
- D. Attend court summons for cases conducted by themselves or when deputed where an expert is required to depose by Court of Law. The candidate shall be required to attend or accompany an expert to attend a minimum of 20 court summons, of which at least 5 should pertain to clinical cases.

Thesis, to be submitted by each candidate at least 6 months before the date of commencement of the theory examination.

PAPER (Theory)

- 1 Basic Sciences and applied subjects as applicable to Forensic Medicine
- 2 Clinical Forensic Medicine and medical jurisprudence
- 3 Forensic Pathology and toxicology
- 4 Applied aspects of clinical disciplines, forensic sciences and recent advances in forensic medicine and forensic psychiatry

Practicals

Day I-

- Clinical Cases- (Any 4) Age estimation, injury report, examination of an insane person to evaluate criminal/civil responsibility, examination of an intoxicated person, examination of a suspected case of poisoning (acute/chronic), disputed paternity case and sexual offences (accused and victim).
- Spots- (10) Histopathology slides, photographs, ligature material, X-rays, soft tissue specimens, bones, poisons and weapons.
- Toxicology Exercises-(2) Identification of common poisons or chemical tests or Thin Layer Chromatography (TLC).
- Laboratory Tests-(1) Identification of biological stains (Semen, Blood, Saliva)
- Thesis/Seminar Presentation-For assessment of research/teaching ability.

Day 2-

- Postmortem Examination.
- Expert Second Opinion.
- Grand Viva Voce.

COURSE CONTENT

I. Orientation Programme

- A. Familiarize with the philosophy and guiding principles of MD (Forensic Medicine) course.
- B. Identify the programme goals, specific objectives and conceptual framework for his/her course.

II. Basic Autopsy Skills

- A. Outline & demonstrate the principles and objectives of postmortem examination, formalities and procedures of medico-legal autopsies in accordance with existing conventions and the law.
- B. Describe and demonstrate the methods for preservation of viscera.

III. General principle of Forensic Medicine and Toxicology

- A. Identify the role of anatomy, physiology, biology, biochemistry, microbiology, pathology, blood bank, psychiatry, radiology, forensic science laboratory as well as other disciplines of medical science to logically arrive at a conclusion in medico-legal autopsies and examination of medico-legal cases.
- B. Describe the basic principles of techniques used in toxicological laboratory namely TLC, GLC, AS, HPLC, and Breath Alcohol analyzer.
- C. Execute the skill and knowledge expected at undergraduate level.

IV. Basic Sciences and Allied Subjects

- A. **Anatomy**- Anatomy of part and organs of the body which are important from the medico-legal aspect.
- (i) Describe surface and regional anatomy of head, neck, chest and abdomen.
 - (ii) Describe gross anatomy and blood supply of heart, brain, lungs, spleen, liver and kidneys.
 - (iii) Describe the anatomy of male and female genitalia.
 - (iv) Describe the comparative anatomy of male and female skeleton.
 - (v) Perform histological examination of various tissues.
 - (vi) Describe the development of foetus.
- B. **Physiology & Biochemistry- Mechanism of phenomenon that are important in the body from the medico legal viewpoint.**
- (i) Describe the mechanism of fluid and electrolyte balance, thermoregulation in newborn and adults, endocrine functions.
 - (ii) Describe physiology of sexual behavior.
 - (iii) Describe physiological functioning of circulatory system, digestive system, respiratory system, haemopoietic system, central nervous system and reproductive system including pregnancy.
- C. **Pathology** - Pathophysiology of vital processes and response mechanisms that modulate tissue and organ reaction to all forms of injury and have a bearing on ante mortem and postmortem appearance in Medico legal cases, assessment of the duration of injuries and co-relate trauma and disease.
- (i) Describe pathology of inflammation and repair, immunity and hypersensitivity, thrombosis and embolism, electric and ionizing radiation injuries, genetic factors in disease, deficiency disorders and malnutrition.
 - (ii) Describe pathology of myocardial Infarction, congenital heart diseases, tuberculosis of lungs, cirrhosis of liver, diseases of glomeruli & tubules and interstitial tissues of kidney, tumors, endocrinal disorders, venereal diseases, spontaneous intracranial haemorrhages.
 - (iii) Describe the pathology of sudden death.
 - (iv) Describe local and systemic response to trauma and patho physiology of shock.
 - (v) Describe pathology of common infections and infestations of medico legal significance.
- D. **Dentistry**- Adequate knowledge of dentistry for solution of medico legal problems like age determination and Identification.
- E. **Radiology**- Adequate knowledge of radiological procedures for solution of medico legal problems.
- V. **Fundamentals of Forensic Sciences**

- A. Describe the general forensic principle of ballistics, serology, analytical toxicology and photography.
- B. Interpret the scene of crime.
- C. Describe role of DNA profile and its application in medico legal practice.
- D. Examine – bloodstains for blood grouping, nuclear sexing, HLA Typing, seminal stains & hair for medico-legal purpose.

VI. Medical Ethics & Law (Medical Jurisprudence)

- A. Describe the history of forensic medicine.
- B. Describe the legal and medico-legal system in India.
- C. Describe medical ethics and the law in relation to medical practice, declarations, oath, etiquette, Medical Council of India, disciplinary control, rights and duties of a registered medical practitioner's, professional misconduct, consent, confidentiality, medical negligence (including all related issues) and Consumer Protection Act.
- D. Describe medical ethics and law in relation to organ transplantation, biomedical human research and experimentation, human rights, citizen character and International codes of medical ethics.
- E. Describe the ethics and law in relation to artificial insemination, abortion, antenatal sex, fetus, genetics, and euthanasia.
- F. Interpret the ethics and law applicable to the animal experimentation.
- G. Describe ethics in relation to aged, women and children.
- H. Describe medical ethics and law in relation to nursing and other medical services/practices.

VII. Clinical Forensic Medicine

- A. Examine, assess legal implications and prepare report or certificate in cases of physical assault, suspected drunkenness, sexual offences, consummation of marriage and disputed paternity.
- B. Collect, preserve & dispatch the specimen/material to the concerned authority and interpret the clinical and laboratory findings which are reported.
- C. Examine injured person, prepare medico-legal report and initiate management.
- D. Determine the age and establish identity of an individual for medico-legal purpose.
- E. Examine a person and assess disability in industrial accidents and diseases.
- F. Perform examination and interpret findings for medico legal purposes in cases pertaining to pregnancy, delivery, artificial insemination, abortion, sterilization, impotence, AIDS and infectious disease.
- G. Describe normal and abnormal sexual behavior and its medico-legal implications.

- H. Examine and assess the medical fitness of a person for insurance, government service, sickness and fitness on recovery from illness.
- I. Examine medico-legal problems related to clinical disciplines of Medicine & allied subjects, Paediatrics, Surgery & allied subjects, ENT, Ophthalmology, Obstetrics & Gynaecology, Dermatology and Anesthesiology.
- J. Examine medico legal problems related to children, women and elderly.
- K. Identify the cases for torture and violation of human rights.

VIII. Forensic Pathology

- A. Apply the principles involved in methods of identification of human remains by race, age, sex, religion, complexion, stature, hair, teeth, anthropometry, dactylography, foot prints, hairs, tattoos, poroscopy and superimposition techniques.
- B. Perform medico-legal postmortem and be able to exhume, collect, preserve and despatch specimens or trace evidence to the appropriate authority.
- C. Diagnose and describe the pathology of wounds, mechanical and regional injuries, ballistics and wound ballistics, electrical injuries, neglect and starvation, thermal injuries, deaths associated with sexual offences, pregnancy, delivery, abortion, child abuse, dysbarism and barotraumas.
- D. Describe patho-physiology of shock & neurogenic shock.
- E. Describe the patho-physiology of asphyxia, classification, medico legal aspects and postmortem findings of different types of asphyxia deaths.
- F. Diagnose and classify death, identify the signs of death, postmortem changes, interpret the autopsy findings, artefacts and result of the other relevant investigations to logically conclude the cause, manner (suicidal, homicidal and accidental) and time of death.
- G. Manage medico-legal responsibilities in mass disasters involving multiple deaths like fire, traffic accident, aircraft accident, rail accident and natural calamities.
- H. Demonstrate postmortem findings in infant death to differentiate amongst live birth, still birth and dead born.
- I. Perform postmortem examination in cases of death in custody, torture and violation of human rights.
- J. Perform postmortem examination in cases of death due to alleged medical negligence as in operative and anaesthetic deaths.

IX. Toxicology

- A. Describe the law relating to poisons, drugs, cosmetics, narcotics drugs and psychotropic substances.
- B. Examine & diagnose the poisoning cases and apply principles of general management and organ system approach for the management of poisoning cases.

- C. Describe the basic principles of toxicokinetics and toxicodynamics of poisonous substances.
- D. Describe the toxic hazard of occupation, industry, environment and the principles of predictive toxicology.
- E. Collect, preserve and dispatch the material for analysis, interpret the laboratory findings and perform the Medico-legal formalities in a case of poisoning.
- F. Demonstrate the methods of identification and analysis of common poisons prevalent in the region.
- G. Describe the signs, symptoms, diagnosis and management of common acute and Chronic poisoning due to –
 - a) Corrosives
 - b) Nonmetallic substances
 - c) Insecticides and weed killers
 - d) Metallic substance
 - e) Vegetable and organic irritants
 - f) Somniferous compounds
 - g) Inebriant substance
 - h) Deliriant substance
 - i) Food contamination/adulteration.
 - j) Substances causing asphyxia (Asphyxiants)
 - k) Substance causing spinal and cardiac toxicity
 - l) Household toxins
 - m) Toxic envenomation
 - n) Biological and chemical warfare.

X. Forensic Psychiatry

- A. Explain the common terminologies of forensic importance in Psychiatry.
- B. Describe the medico-legal aspects of Psychiatry and mental health.
- C. Describe the medico-legal aspects of drug addiction.
- D. Describe role of Psychiatry in criminal investigation, punishment and trial.
- E. Describe the civil and criminal responsibilities of an insane person.

Recommended Reading

1. Subramanyam BV. Modi's Medical Jurisprudence And Toxicology. Butterworths India, New Delhi
2. Nundy A. Principles Of Forensic Medicine. New Central Book Agency Calcutta.
3. Lyon's Medical Jurisprudence for India. Delhi Law House, Delhi.
4. Reddy KSN. The Essentials of Forensic Medicine & Toxicology, K. Saguna Devi Publisher, Hyderabad.
5. Parikh CK. Parikh's Textbook Of Medical Jurisprudence, Forensic Medicine & Toxicology, CBS Publishers And Distributors, New Delhi.
6. Bernard Knight. Forensic Pathology. Arnold Publishers London.
7. Di Maio VJ & Di Maio D. Forensic Pathology.. CRC Press New York.
8. Camps FE. Gradwohl's Legal Medicine Bristol: John Wright & Sons Ltd.
9. American College Of Legal Medicine Textbook Committee. Legal Medicine. Mosby Publishers. USA.
10. Di Maio VJM. Gunshot Wounds, CRC Press, USA.
11. Gordon I, Sharpiro HA, Berson SD. Forensic Medicine- A Guide To Principle. Chrchil Livingstone New York.
12. Parikh CK. Medicolegal Post Mortems in India. Medical Publications, Bombay.
13. Mant AK. Yaylor's Principles and Practice of Medical Jurisprudence, Churchill Livingstone, New York.
14. Gresham GA & Turner AF. Postmortem Procedures an Illustrated Text Book. Wolfe Medical Publications.
15. Ludwig J. Current Methods of Autopsy Practice. WB Saunders Company London.
16. Gordon I. & Turner R. Medical Jurisprudence. E& S Livingstone Ltd. London.
17. Spitz WU. Fisher RS. Dedicolegal Investigation Of Death. Charles Thomas Publisher.
18. Schroeder O.C. Dental Jurisprudence. PSG Publishing Company, Littleton, Massachussetts.
19. Stark MM. A Physicians Guide to Clinical Forensic Medicine. Humana Press, Totowa, New Jersey.
20. Olshakar JS, Jackson Js. Jackson MC, Smock WS. Forensic Emergency Medicine. Lippincott William and Willkins. Philadelphia.
21. Norah Rudin, Keith Inman. An Introduction To Forensic DNA Analysis. CRC Press, London.
22. Robertson J., Ross AM., Burgoyne LA. DNA In Forensic Science-Theory, Technique And Application. Ellis horwood, UK.

23. Curry AS. Methods Of Forensic Science Vol. I-III. Interscience Publishers London.
24. Clement JG and Ranson DL. Craniofacial Identification in Forensic Medicine. Arnold Publishers, London.
25. Sellier GK, Kneubuechl BP. Wound Ballistics and The Scientific Background. Elsevier, Amsterdam.
26. Bernard Knight. Simpson's Forensic Medicine. Arnold Publishers London.
27. Bernard Knight. Legal aspects Of Medical Practice. Churchill Livingstone New York.
28. Gunn & Taylor. Forensic Psychiatry-Clinical, Legal and Ethical Issues. Butterworth Heinemann
29. G. Gustafson. Forensic Odontology. Staples Press.
30. Gonzalez TA. Legal Medicine. Pathology and Toxicology-appleton Century-Crofts Inc. New York.
31. Hirsch CS, Morris RC, Moritz AR. Handbook of Legal Medicine CV Mosby Company London.
32. Lincoln PJ & Thomas J. Forensic DNA Profiling Protocols. Methods in Molecular Biology. Vol. 98, Humana Press, Totowa, New Jersey.
33. Lee HC & Gaensslen RE. DNA and other polymorphism in Forensic Science. Yearbook Medical Publisher, London.
34. Bergaus G. Brinkmann B., Rittner C. Stakk M. (Eds.). DNA Technology and its Forensic application. Springer-Verlag. Berlin.
35. Beveridge A. Forensic Investigation of Explosions. Taylor and Francis USA.
36. Jay Dix. Colour Atlas of Forensic Pathology. CRC Press New York.
37. Bernard Knight. (ed.) The Estimation of Time Since Death in the early Post Mortem Period Arnold Publisher London.
38. Mant AK. Modern Trends in Forensic Medicine 1-3 Butterworth, London.
39. Luntz and Luntz. Handbook for Dental Identification. JB Lippincott. Toronto.
40. Buttler JM. Forensic DNA Typing. Academic Press New York.
41. Mason JK. Forensic Medicine-an illustrated reference. Chapman and Hall, London.
42. Mason JK. Paediatric Forensic Medicine and Pathology. Chapman and Hall, London.
43. Patnaik VP. MKR Krishnan's handbook of Forensic Medicine. Paras Publishing.
44. Lundquist Frank. Methods of Forensic science, vol. II, Interscience publishers.
45. Mehta HS. Medical, Law and Ethics in India. The Bombay samachar Pvt. Ltd.
46. Gaur's firearms, Forensic Ballistics, Forensic chemistry and Criminal Jurisprudence. Law Publishers (India) pvt. Ltd. Allahabad.

47. Tedeschi Echert. Forensic Medicine Vol. I-IV., WB saunders Company.
48. Polson, Gee & Knight. The Essentials of Forensic Medicine. Pergomann Press UK
49. Redsicker DR. Forensic Photography. CRC Press USA.
50. Krogmann. Human skeleton in Forensic Medicine.
51. Abdullah Fateh. Handbook of Forensic Pathology
52. Simpson K. Taylor's Principle and Practice of Medical Jurisprudence. Vol I-II.
53. Krishan Vij. Textbook of Forensic Medicine and Toxicology, Chrchil Livingstone.
54. Pillay VV. Textbook of Forensic Medicine and Toxicology, Paras Publishing, Hyderabad.
55. JB Mukherjee. Textbook of Forensic Medicine & Toxicology, Arnold's publishers, London.
56. Henry J., Wiseman H., Management of Poisoning. Published by WHO, UNEP & ILO.
57. Flanagan RJ et al. Basic Analytical Toxicology. Published by WHO, UNEP & ILO
58. Guidelines for Poison Control. Published by WHO, UNEP & ILO
59. Genetics in Medicine – J.S. Thompson and M.W. Thompson.
60. Research – How to plan, speak and write about it – C. Hawkins and M. Sorgi.

Journals

1. American Journal of Forensic Medicine and Pathology (Published by-Lippincott Williams and Wilkins USA.
2. Medicine, Science and The Law (British academy of Forensic Sciences)
3. Forensic Science International (Publisher-Elsevier, Ireland)
4. Archives of Suicide research (International academy for Suicide Research, Brunner-Routledge, Taylor and Francis Group. 325, chestnut street, Philadelphia-PA 19106)
5. Journal of Forensic Science (American academy of Forensic Sciences, Published by ASTM Philadelphia USA)
6. Journal of Trauma (Published by-Lippincott Williams and Wilkins, Florida, USA.)
7. Journal of Forensic Medicine & Toxicology (Dept. of Forensic Medicine, AIIMS, New Delhi.
8. Journal of Indian Academy of Forensic Medicine.
9. The New England journal of Medicine (Massachusetts Medical Society)
10. Japanese Journal of Legal Medicine (Japanese Society of Legal Medicine)
11. Medico-legal Journal of Ireland (Published by-Thomson Round Hall, From University of Dublin,)

12. British Medical Journal
13. Journal of American Medical Association
14. British Journal of Psychiatry (Royal college of Psychiatrists, London)
15. Environmental Health Perspective (Published by National Institute of Environmental Health sciences)
16. WHO Bulletin (WHO Geneva)
17. American Journal of Pathology (American Society of Investigative Pathology)
18. American Journal of Psychiatry (American Psychiatrists Association)
19. Journal of Anatomical Society of India.